

F16, 2

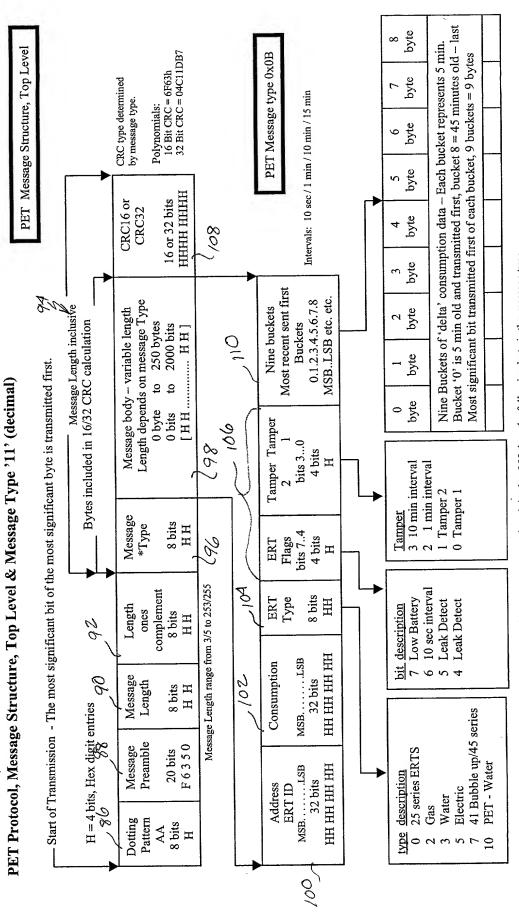
Data Flow this direction

T16. X

4 - Zero bits plus dotting Pattern 3...0 LS Nibble MSB-LSB 4 - Zero (0d 8-bits Bits Number of Bytes Dotting Pattern 4-bits 7...4 MS Nibble First Bit transmitted to COM processor 99 MSB - LSB of bytes to follow 8-bits Number MSB - LSB Hop Count 8-bits B Least significant byte sent first MSB...LSB Consumption Pulse Count Register Number 1 & 2 sequence of bits transmitted to COM processor Bytes included in Checksum calculation 2 MSB - LSB Flags and Tamper bits 8-bits MSB...LSB, PET Hardware MSB - LSB le Type 8-bits MSB...LSB, Bytes included in "Bytes to Follow" count Most significant byte sent last MSB...LSB, Consumption Number 2 7 32-bits Consumption Number 1 2 32-bits Last Bit sent to COM processor Least significant byte sent first MSB...LSB PET ID / Serial Number Sequence of bits transmitted to COM processor PET ID Serial Number 32-bits 20 MSB...LSB, 9 PET Message Type 8-bits MSB - LSB MSB...LSB, Most significant byte sent last MSB...LSB, er, 2's Complement 8-bits Checksum MSB - LSB

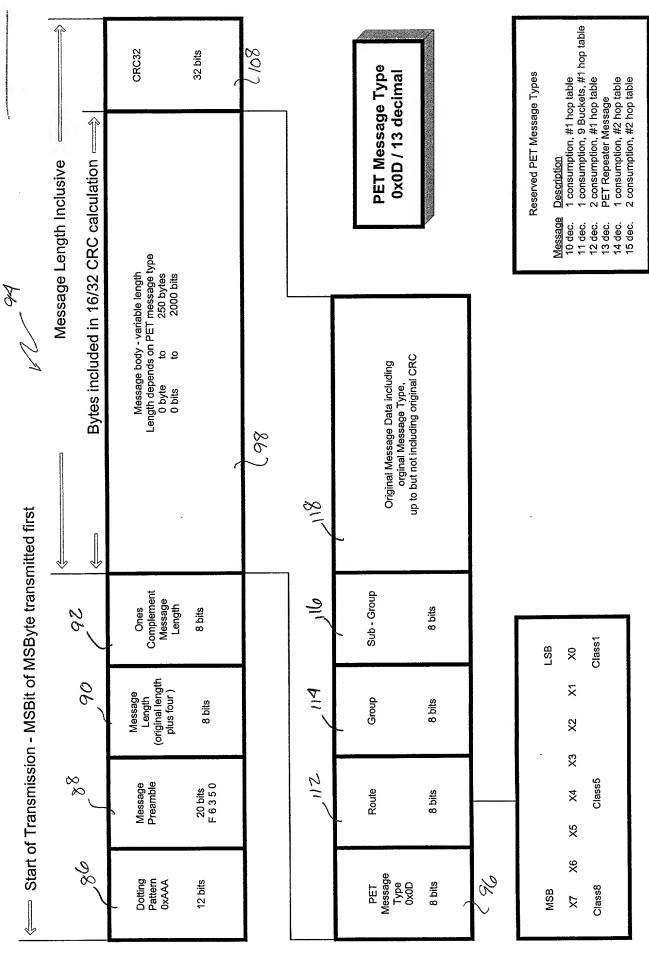
12/30/99 JM//DD

### Description 1 consumption, #1 hop table 1 consumption, 9 Buckets, #1 hop table 2 consumption, #1 hop table 1 consumption, #2 hop table 2 consumption, #2 hop table 000 16 or 32 bits CRC32 CRC16 ö PET Message Type 0x0A / 10 decimal Reserved PET Message Types F16.4 Message Length Inclusive Message body - variable length Length depends on PET message type 250 bytes 2000 bits Message 11 dec. 12 dec. 13 dec. 14 dec. 10 dec. <u>۽</u> ۾ 86 0 byte 0 bits PET Protocol, Message Structure, Top Level & Message Type 10" (decimal) Description 10 Minute Interval PET Message Type 0x0A 1 Minute Interval 8 - bits 9 Tamper - 2 Tamper - 1 TAMPER Flags and Tamper 8 - bits MSB - LSB 001 Ones Complement Message Length 9 223日 Start of Transmission - MSBit of MSByte transmitted first 8 bits 10 Second Interval д R PET Hardware MSB-LSB Type 8 - bits 0x10 Leak Detect Leak Detect Message Length Description Low Battery 8 bits FLAGS 型 て 9 5 4 200 Message Preamble 20 bits F 6 3 5 0 Consumption Number 1 MSB - LSB 32 - bits 101 Electric 41 Bubble up / 45 series PET - Water Dotting Pattern 0x0A 001 4 bits Description 25 series ERTS 98 PET ID Serial Number 32 - bits Water Gas MSB - LSB Dotting Pattern (variable number of bytes) (currently 32 bits/4 bytes of dotting) 8 bits 17pe 0 2 3 3 7



\*If message type is equal to 255 then the next byte is the message type unless it is also 255 then the following byte is the message type.

# PET Protocol, Message Structure, Top Level & Message Type 13" (decimal)



I consumption, 9 Buckets, #1 hop table

1 consumption, #1 hop table

Description 10 Minute Interval 1 Minute Interval Tamper - 2 Tamper - 1

123日

10 Second Interval

B<u>it</u> 7 6 5 5

Description Low Battery Leak Detect Leak Detect

41 Bubble up / 45 series PET - Water

Electric

Water

Gas

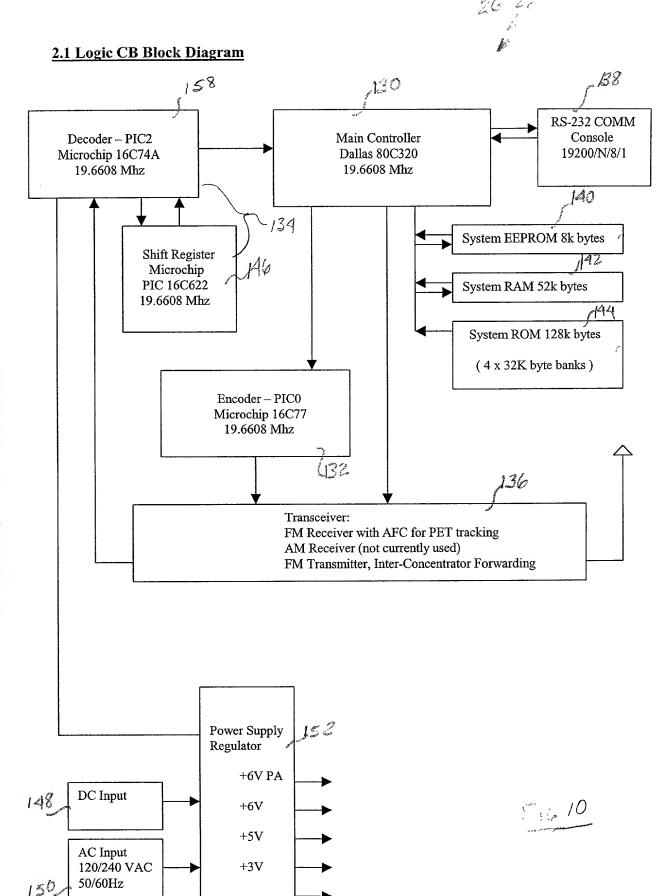
2 consumption, #1 hop table 1 consumption, #2 hop table 2 consumption, #2 hop table

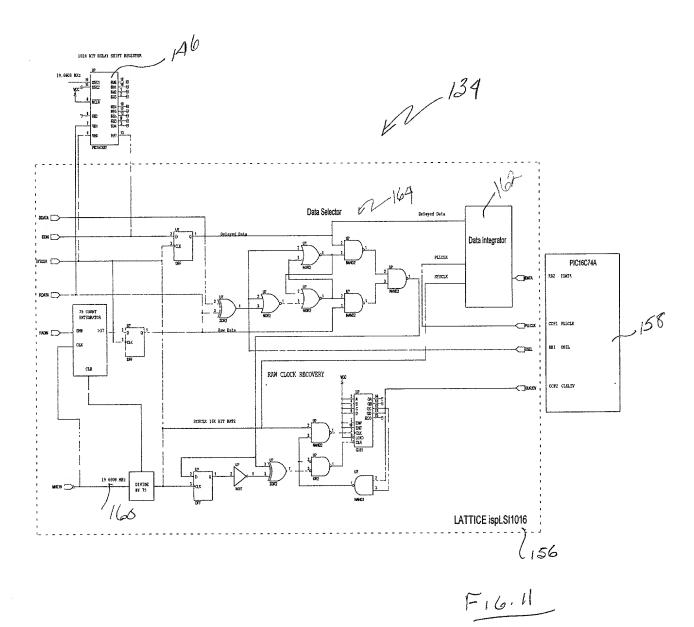
10 dec. 11 dec. 12 dec. 14 dec.

### Inter-Concentrator Communications, Large Block Mode

86	8	8 90 92	< Start of t	ytes includ	ed in CRC32 (	Calculatio	n		
Dotting Pattern DXAAAAAAAAA 4 1/2 bytes 36 bits	Preamble 0xF6350 2 1/2 bytes 20 bits	Length Comp. (LSB) Length (bytes) (LSB) (bytes) 8 bits 8 bits	MSG Length (MSB) (bytes) 8 bits 8 bits	Comp. Sour Length Conc (MSB) Seri (bytes) Numl 8 bits 32 b	en. Concen ial Serial ber Númber	Primary Rayload Identifier 8 bits	Secondary Payload Identifier 8 bits	Next Packet Interval (seconds) 32 bits	TX Timer Value (seconds 32 bits
and him have ed	100 - 100 -	<u> </u>	196			•			· · · · · · · · · · · · · · · · · · ·
	-	ckets maxi		f Moet Signi	ficant Ruta		End of by	tae includ	led in
10 96	inue Transmission - Most Significant Bit of Most Significant Byte					End of bytes included in _ CRC32 Calculation			
Message Type	PET ID	Consumption	Hardyvare Type	Mode and Tamper	Age at Transmit Time (seconds)		Additional Packets 45 packets maximum		
<b>8.5i</b> ts	32 bits	32 bits	8 bits	8 bits	32 bits		1,20 bits per packet		
	2 m	I		* * * · · · · · · · · · · · · · · · · ·		J			
Se mind	Fransmiss C, Most Sigi		Most Signifi	cant Byte Tr	ansmitted Fire	st			
	<u> </u>						PET	Concent	rator

2/12/01 rnd





Decoder Block Diagram

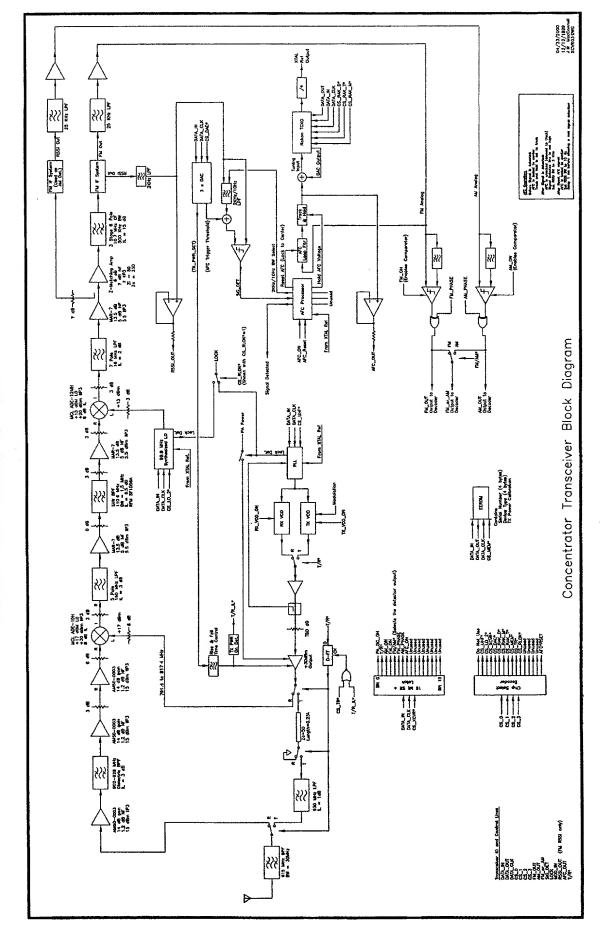
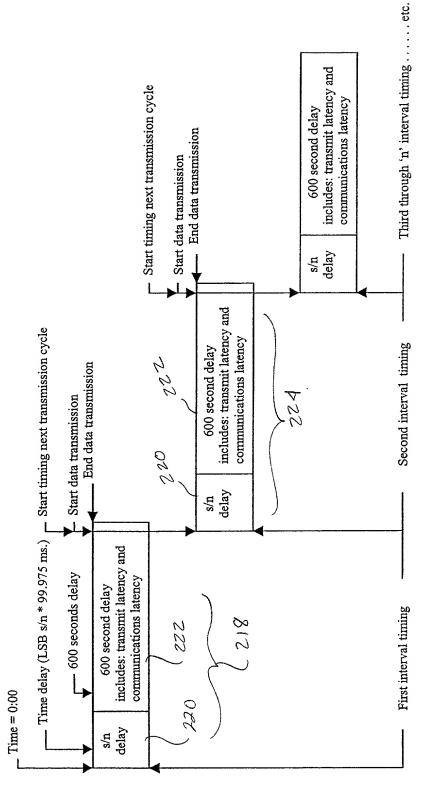


Figure 12

### Pet Transmission Timing



Notes: The interval is defined as (LSB of PET ID \* 99.975 milliseconds ) + 600 seconds.

The actual transmission will begin at the end of the interval timing.

The interval+1 timing will begin immediately at the end of the current interval.

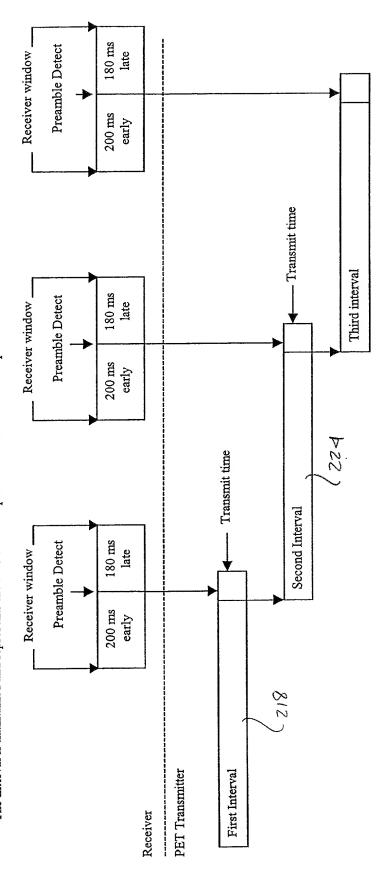
Initial timing for the interval+1 will overlap actual 'transmit' time of the current interval.

F16.13

## PET Receiver Minimum Window

Note: The window required is 380 milliseconds (200ms early plus 180ms late) this represent the minimum time necessary to compensate for crystal tolerances and preamble detect.

200 milliseconds represents 180 milliseconds early plus 20 milliseconds allowed for preamble detect to occur. The interval is maintained and represents the time from one preamble detect to the next preamble detect.



F16.14

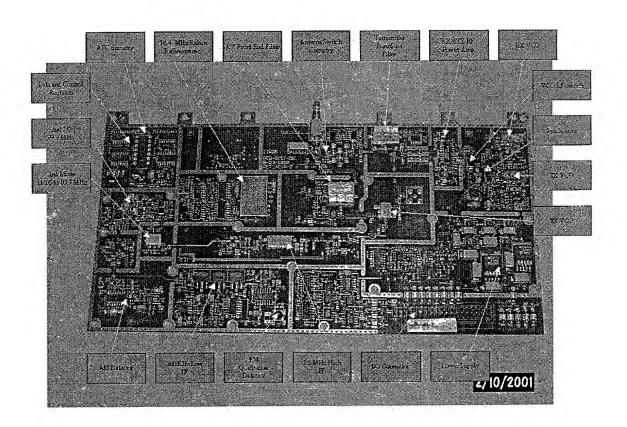


Fig. 15

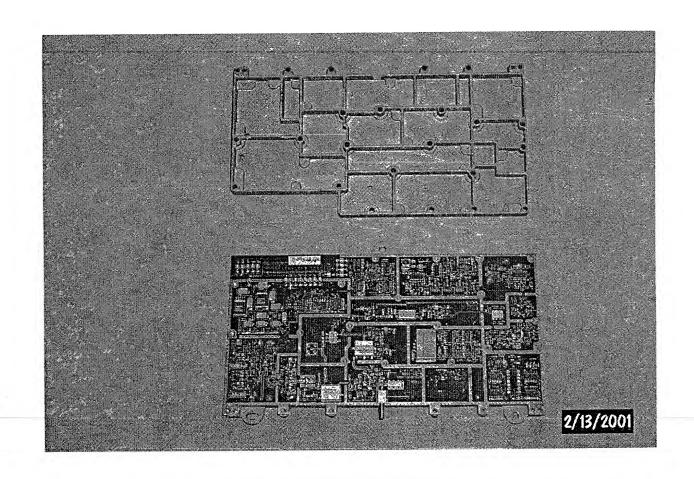


Fig. 16